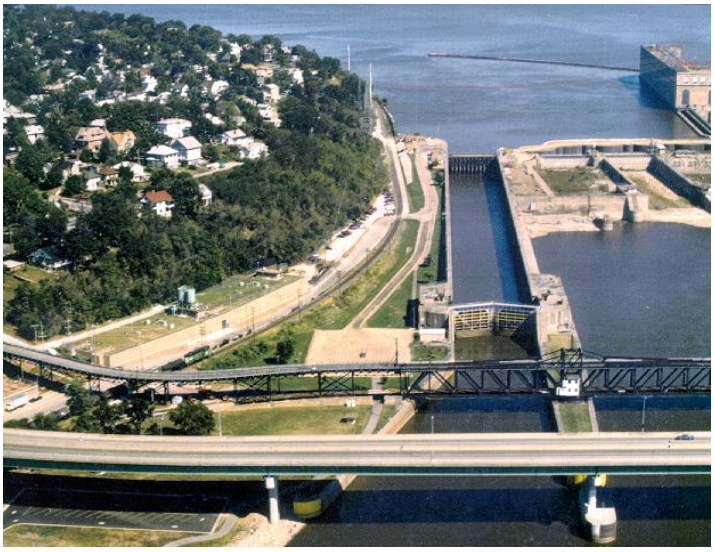
Lock & Dam 19

(Keokuk, Iowa)
Mississippi River

U.S. ARMY CORPS OF ENGINEERS **BUILDING STRONG®**



Construction: 1952-1957

General Contractors:

Stage I: McCarthy Improvement Company, Davenport, Iowa
Stage II: Jones Construction Company, Charlotte, N.C.
Stage III: Oil Gear Company, Milwaukee, Wis.
Stage IV: Evans Electrical Construction Co., Omaha, Neb.

Congressional District: IA-2; IL-17

Description

Lock and Dam 19 is 364.2 miles above the confluence of the Mississippi and Ohio rivers.

The lock, located on the Iowa shore, is 110 feet wide and 1,200 feet long, twice the size of the standard 9-Foot Channel Project lock. The upper lock gates consist of 23-foot high vertical lift gates, and the lower gates are miter gates, 53-feet 2-inches high. The lower lock gates are conventional miter gates, while the upper service gate is a submergible lift gate. Upstream from the upper service gate is a submergible vertical-lift guard gate which serves as an emergency gate in case of failure of the service gate. This gate also serves as a bridge in the roadway to the old dry dock, old lock, powerhouse and dam.

The lock's land wall is 2,161 feet long, consisting of an upper 237-foot and lower 605-foot guidewall, and a 1,319-foot main lock wall. The river wall is 1,936 feet, which includes a 532-foot wall downstream of the lower gate pintles.

Maximum lift is 38.2 feet with an average of 36.3 feet, the second highest on the Mississippi River. The highest lift of any lock on the River is at the Upper St. Anthony Falls in the St. Paul District. Filling the lock takes approximately 10 minutes; 9.25 minutes to empty. It takes 12 hours for water to travel from Lock and Dam 18, in Gladstone, Ill., to Lock and Dam 19. Pool 19 is the longest of the nine-foot channel navigation system.

An auxiliary lock, which was the original lock completed on June 12 1913, is 110 feet wide by 358 feet long. This lock is no longer in service. The dry dock, also no longer in use, measures 150 feet wide by 463 feet long. Privately built and owned, the dam was built in 1913 and includes 119 rectangular sliding gates.

History/Significance

The lock opened on May 14, 1957. The complex was not built as part of the original 9-foot channel project. After the turn of the 19th century, the Mississippi River Power Company asked Congress for permission to build a dam across the River at Keokuk, Iowa. In 1905 Congress authorized the design and construction of the project. Construction began in 1910 and the completed lock was turned over to the federal government on June 12, 1913. The new lock was 110 feet wide by 400-feet long. The entire facility was constructed without government subsidy.

Due to the significant growth of commercial river traffic and long waits by tows, Congress appropriated $994,000 in 1952 to begin construction of a new lock. The peak number of men employed during Stage I construction was 147 during October 1953. A peak employment of 415 was reached in 1955 and 1956. Due to abnormally good weather conditions and low water stages, Stage I work was always ahead of schedule. Some high water stages in fall 1954 caused Stage II construction to fall behind schedule by approximately 30 days. All contracts were completed

approximately four months behind schedule, primarily due to excessive amounts of rain occurring in May, June and July 1957.

The new Lock 19 was completed at a cost of $13,500,000. The U.S. Army Corps of Engineers and the Union Electric Company completed the entire complex at a cost of $37,909,000.

Annual Tonnage (20-Year Historical)

Year	Tons	Year	Tons	Year	Tons	Year	Tons
1992	35,964,699	1997	29,600,884	2002	34,914,721	2007	25,504,854
1993	22,789,679	1998	31,076,726	2003	29,827,673	2008	19,275,225
1994	26,705,868	1999	35,803,139	2004	24,190,511	2009	23,060,379
1995	33,221,948	2000	34,097,581	2005	24,697,974	2010	21,353,305
1996	32,348,782	2001	30,128,512	2006	26,390,867	2011	20,521,750

Commodity Tonnage & Lockages (2011)

Coal	1,624,664
Petroleum	216,450
Chemicals	3,281,510
Crude Materials	2,177,859
Manufactured Goods	1,206,327
Farm Products	11,961,389
Manufactured Machinery	28,520
Waste Material	0
Containers & Pallets	1,600
Unknown	23,431

Subtotals:	Grain	11,091,435
	Steel	78,020
Lockages:	Commercial Boats:	1,654
	Recreation Boats:	526
	Light Boats:	156
	Other Boats:	48
	Total Boats:	2,384
	Total Cuts:	2,131

The 9-Foot Channel Project

Lock and Dam 19 is one of 29 locks and dams on the Upper Mississippi River that provide a water stairway of travel for commercial and recreational traffic from Minneapolis to the Gulf of Mexico.

The existing 9-foot Channel Navigation Project was largely constructed in the 1930s and extends down the Upper Mississippi River from Minneapolis-St. Paul to its confluence with the Ohio River and up the Illinois Waterway to the Thomas J. O'Brien Lock in Chicago. It includes 37 Locks and approximately 1,200 miles of navigable waterway in Illinois, Iowa, Minnesota, Missouri and Wisconsin.

The maintenance needs of the aging infrastructure are increasing at a rate much greater than the operations and maintenance funding provided for the system which adversely affects reliability of the system. Long-established programs for preventive maintenance of major lock components have essentially given way to a fix-as-fail strategy, with repairs sometimes requiring weeks or months to complete. Depending on the malfunction, extended repairs can have major consequences for shippers, manufacturers, consumers, and commodities investors.

Additionally, the system's 600-foot locks do not accommodate today's modern tows without splitting and passing through the lock in two operations. This procedure requires uncoupling barges at midpoint which triples lockage times and exposes deckhands to increased accident rates.

There are more than 580 manufacturing facilities, terminals, grain elevators, and docks that ship and receive tonnage in the Upper Mississippi River basin. Grains (corn and soybeans) dominate traffic on the system. Other commodities, mainly cement and concrete products, comprise the second largest group. A modern 15-barge tow transports the equivalent of 1,050 large semi-trucks (26,250 cargo tons, 875,000 bushels, or 17,325,000 gallons). Annually, the 9-foot project generates an estimated $1 billion of transportation cost savings compared with the operation and maintenance costs of approximately $115 million.